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(पहला पुनरीक्षण)

Indian Standard

LABELLING PASTE FOR PAPER LABELS — SPECIFICATION

(First Revision)

UDC 665·939·57 — 404·9 : 621·798·68

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

September 1991 **Price Group 2**

Adhesives Sectional Committee, PCD 15

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Adhesives Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was first published in 1964 and covered adhesives based on starch, casein, gelatin, etc, for application on paper labels with the help of automatic labelling machines. These paper labels were used for affixing on glass, wood, metal and fibreboard surfaces.

With the increase in use of synthetic organic materials as a base for manufacture of adhesives, for example, polyvinyl alcohol, polyvinyl acetate, etc, in the revision, the selection of raw product material has been left open to enable manufacturers to exercise their ingenuity, provided the final complies with all the requirements of the standard.

Adhesives covered under this standard are intended for adhering printed paper labels to soft wood, solid fibreboard glass, metals like steel, galvanized iron and enamel painted metals.

In this revision, requirement for labelling pastes, for application on paper labels with the help of brush and roller have also being included as Type 1 along with the labelling pastes which may be applied with automatic labelling machines (Type 2). Efforts have been made to make this standard performance oriented rather than composition specific. For this reason in place of requirement for total solids, *p*H value, etc, performance checking properties like transparency, brushing, blushing, bleeding, flexibility and accelerated weathering have been included along with adhesion strength. Test for determination of viscosity, resistance to water and adhesion strength at elevated and low temperature have been retained in this revision also.

While no specific requirements have been laid down for insect repellency and toxicity, it is recommended that material shall be insect repellent and fungi-resistant. It would be the responsibility of manufacturer to ensure that the material is non-toxic and shall not present a health hazard to individuals from inhalation, skin contact when used or its intended purpose or as a result of exposure after its application.

In the formulation of this standard, considerable assistance has been derived from Fed. spec. MMM-A-179B, 1982 'Adhesive : Paper labels' and Ministry of Defence, U.K. Standard No. DEF STAN 80-87/issue 1 Feb 1983. Adhesive for affixing paper labels to tinplate'

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

LABELLING PASTE FOR PAPER LABELS — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for adhesives for paper labels to be applied by brush, roller, spray and automatic labelling machines.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
1234 : 1980	Ink, stencil, oil base for marking porous surfaces (*first revision*)
1388 : 1959	Reagent bottles
1848 : 1981	Writing and printing papers (*second revision*)
6911 : 1972	Stainless steel plate, sheet and strip

3 TYPES

In this standard two types of labelling pastes have been covered:

Type 1 For use on by brush and roller

Type 2 For use on by automatic labelling machines

4 REQUIREMENTS

4.1 Description

The material shall be non-corrosive, water based or water reduceable of uniform consistency, free from dirt and lumps and segregation or settling to such an extent as to render dispersion difficult, as determined by visual examination. It shall be free from objectionable odour. It shall not have any bleaching or deepening effect on the colour of paper on which it is to be used. (*see* **4.3**)

4.2 Brushing Properties

The adhesives as received shall be of brushing consistency (for Type 1) and capable of being applied smoothly by machines (for Type 2), throughout the temperature range of 5 to 45°C when tested as prescribed in **A-1**.

4.3 Colour

The adhesives shall be light coloured, transparent or translucent liquid. After application to labels, the adhesive shall dry to a substantially colourless transparent finish as tested according to procedure given in **A-2** and shall not reduce the legibility of printed label text when viewed at a distance of 50 cm from observer's eye.

4.4 Blushing

There shall be no evidence of blushing of the film during the drying period when tested as specified in **A-3**.

4.5 Viscosity

The adhesive shall have viscosity as follows:

Type 1 for use on brush or roller 1 000 — 5 000 mPa-s (10-40 poise)

Type 2 for use on automatic labelling machine 10 000 — 30 000 mPa-s (100-300 poise)

4.6 Adhesion

The adhesive shall show adhesion strength to pass the test as specified in **A-5**. The label shall not strip from the test surface except in small chips and shall adhere smoothly and firmly with no blistering, buckling, curling or cracking when tested as prescribed in **A-5** for the following:

a) Resistance to high temperature,

b) Resistance to low temperature, and

c) Resistance to water.

4.7 Drying Time

The adhesive shall dry tack free in maximum of 5 minutes for Type 1, and 2 minutes for Type 2. The adhesive shall dry hard in a maximum of 16 hours when tested as prescribed in **A-6**.

4.8 Bleeding

The adhesive shall not cause bleeding of the original stencilling when tested as specified in **A-7**.

4.9 Flexibility

The adhesive shall adhere tightly, without cracking or flaking on the bend of paper label when tested as specified in **A-8**.

4.10 Accelerated Ageing

Accelerated ageing is determined by keeping a glass bottle having a paper label at a specified temperature for a specified time and then examining the adhesion of the label to the bottle. The paper labels shall continue to adhere to glass bottle when tested as specified in **A-9**.

4.11 Flame Resistance

If desired by the buyer, the adhesive shall be flame resistance. It shall cease burning upon removal of an externally applied flame when tested as specified in **A-10**.

4.12 Storage Life

The material when stored in original and unopened containers shall continue to satisfy all the requirements prescribed in **4**, for a period of at least six months from the date of manufacture.

5 APPLICATION OF ADHESIVE

Care must be taken to ensure that the surface on which label is to be affixed must be dry, clean and free from waxes, oils of greases. An intimate contact shall be ensured between the label and the bonding surface. This is specially important in irregular curved surfaces.

6 PACKING AND MARKING

6.1 The material shall be securely packed in suitable containers as agreed to between the purchaser and the supplier.

6.2 The containers shall be marked with the following information:

a) Name of the material;

b) Indication of the source of Manufacture;

c) Mass of the material in the container;

d) Identification in code or otherwise to enable the batch and month and year of manufacture to be traced from record;

e) Shelf life of the material; and

f) Directions for storage and application, if any.

6.2.1 The containers may also be marked with the Standard Mark.

7 SAMPLING

7.1 Preparation of Test Samples

Representative samples of the material shall be prepared as prescribed in Annex B.

7.2 Number of Tests

Tests for determination of all the requirements of the standard given under **4** shall be performed on each of the individual samples separately.

7.3 Criteria for Conformity

A lot shall be declared as comforming to the requirements of the specification, if the different test results as obtained under **7.2** meet the corresponding requirements given in the standard.

ANNEX A

(*Clause* 4)

TESTING OF LABELLING PASTES

A-1 BRUSHING PROPERTIES

A sample of the adhesive and some metal plates shall be placed inside a temperature controlled chamber and the temperature adjusted to 5°C. After the sample temperature has reached 5°C, the sample shall be brushed upon one of the metal plates inside the chamber. The brushing consistency shall also be tested at 10°C interval up to 45°C. Safety precautions should be taken that flammable vapours do not get ignited

A-2 COLOUR

The colour shall be determined by coating a glass test panel and printed label with the material, allowing the material to dry thoroughly and then visually examine the film and print for compliance with **4.3**.

A-3 BLUSHING

A-3.0 General

Blushing is a condition in which a cloudy film appears on a newly lacquered surface usually due to too rapid drying or due to damp atmosphere.

A-3.1 Resistance to blushing of the adhesive coating shall be tested on a glass test panel which is coated with a thin film of adhesive. Immediately place the panel in a conditioning chamber maintained at 27 ± 2°C and 65 ± 5 percent relative humidity. Air in the chamber shall be completely changed every 10 minutes. Examine the film while it is drying at intervals not exceeding 10 minutes. There shall be no evidence of blushing of the film.

A-4 VISCOSITY

Fill the compound in a 250-ml beaker taking care that it remains free from air bubbles with the use of a viscometer such as Brookefield RVT model, determine viscosity of the material using spindle No. 3 for Type 1 and spindle No. 6 for Type 2 at 27±2°C. Other viscometers may also be used provided they have been calibrated against Brookefield viscometer. A minimum of five readings shall be taken within 15 minutes and at a fixed speed of 20 rev/min on the viscometer. The average of these readings may be reported in mPa-s.

A-5 ADHESION

A-5.1 Preparation of Test Panels

Two test panels of size 10×15 cm from each of the material listed below shall be prepared for each test:

a) Smooth glass plates;

b) Steel plates conforming to IS 6911 : 1972, Grade 07Cr18Ni9;

c) Solid fibre board;

d) Galvanized iron;

e) Soft wood blocks; and

f) Enamel-painted metal.

A-5.2 Procedure

Neat, clean and dry panels shall be coated with a thin continuous film of the adhesive. A non-gummed paper label of size 5×7 cm shall be immediately pressed and smoothed into place upon the adhesive. A thin continuous film of the adhesive shall then be brushed over the entire label and panel surfaces. Allow it to stand for air-dry at 27±1°C and relative humidity of 65±2 percent for 24 hours.

A-5.2.1 A corner of each label should be loosened slightly and by grasping it between the thumb and finger, an attempt shall be made to remove each label from the test panel by a slow, steady peeling action. The labels shall not stripped from the test panel except in small chips. If the separation occurs without tearing the paper strips, the efficiency of adhesion is unsatisfactory.

A-5.3 Resistance to High Temperature

The test panels prepared as specified in **5.1** and **5.2** shall be conditioned at a temperature of 60±1°C in an air oven.

A-5.3.1 The material shall be taken to have passed the test if the label is adhering firmly with no blistering, bulging, curling, cracking or stripping-off from the panels.

A-5.4 Resistance to Low Temperature

Two test panels for each of the material listed in **A-5.1** shall be prepared as specified in **A-5.2**. The panels with labels affixed shall be conditioned for 24 hours at −5°C and examined at this tamperature for evidence of tackiness.

A-5.4.1 The material shall be taken to have passed the test if the label is adhering firmly with no blistering, bulging, curling, cracking or stripping-off from the panels.

A-5.5 Resistance to Water

Two test panels for each material as referred in **A-5.1** prepared as specified in **A-5.2**. The panels shall be immersed in distilled water for 18 hours and allow to dry for 2 hours at 27± 1°C. At the end of the drying period, examine the label for its adhesion by loosening a corner of the label and pulling it.

A-5.5.1 The label shall not stripped from the test panel except in small chips.

A-6 DRYING TIME

Apply a thin film of the paste on the paper label and allow it to dry in air at a temperature of 27±2°C and 65±5 percent relative humidity for 5 minutes ±5 seconds for Type 1 and 2 minutes ±5 seconds for Type 2. The paper used for making labels shall conform to IS 1848 : 1981. Apply this label immediately to the clean and dry reagent bottle of 500 ml nominal capacity (IS 1388 : 1959). The material shall be taken to have passed the test if the label drops down itself from the bottle or can be stripped without leaving any paper fibres adhering to reagent bottle.

A-7 BLEEDING

Take a metal test panel and stencil it with black opaque stencil ink conforming to IS 1234 : 1980. The test panel shall then be completely coated with one coat of commercially available water-emulsion stencil obliterating paint. Alow to dry for 1 hour. One thin coat of adhesive shall then be applied over the obliterating paint and allow to dry. The test panel shall then be visually examined to determine if the stencil ink has bled through the obliterating paint to determine the compliance with **4.8**.

A-8 FLEXIBILITY

Apply a thin film of adhesive on paper label. Allow it to hard dry for 72 hours at 27±2°C. After drying, the label shall be bent to 180°C and the adhesive layer examined for cracking and flaking to determine compliance with **4.9**.

A-9 ACCELERATED AGEING

Apply a thin film of the paste (0·05 mm approximately on the back of 5×7 cm) printed paper label. The paper used for making label shall conform to IS 1848 : 1981. Apply this label to clean, dry reagent bottle. Allow the label to completely dry at room temperature and then place in an air oven maintained at 50±2°C for 24 hours.

Take out the bottle from the oven and cool it to room temperature.

The material shall be taken to have passed the test if the label is adhering firmly with no blistering, bulging, curling, cracking or stripping-off from the bottle. It shall also not stain the label or cause the fading of colour of the printed matter.

A-10 FLAME RESISTANCE

When specified by the buyer, a metallic test panel shall be prepared, cured and dried. The panel shall then be held in a vertical position and a small flame from a microburner shall be passed slowly back and forth along one edge of the panel. The flame shall be removed and the panel carefully observed to determine compliance with **4.11**.

ANNEX B

(*Clause* 7·1)

SAMPLING OF LABELLING PASTE

B-1 GENERAL REQUIREMENTS OF SAMPLING

B-1.0 In drawing, preparing, storing and handling test samples, the following precautions and directions shall be observed.

B-1.1 Samples shall not be taken in an exposed place.

B-1.2 The sampling instrument shall be clean and dry.

B-1.3 The material in the containers shall be mixed thoroughly before drawing samples.

B-1.4 Precautions shall be teken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

B-1.5 The samples shall be placed in the clean and dry glass containers.

B-1.6 After filling, the sample containers shall be closed tightly with a stopper, sealed and marked with full details of sampling, such as sample number, the date of sampling, the batch of manufacture of material, name of manufacturer and other important particulars of the consignment.

B-1.7 Samples shall be stored in such a manner that the conditions of storage do not unduly affect the quality of the material.

B-2 SCALE OF SAMPLING

B-2.1 Lot

All the containers of the same size in a single consignment of the material drawn from a single batch of manufacture shall constitute a lot. If a consignment is declared or known to consist of different batches of manufacture, or of different sizes of containers, the containers belonging to the same batch and of the same size shall be grouped together and each such group shall constitute a separate lot.

B-2.1.1 Samples shall be tested for each lot for ascertaining the conformity of the material to the requirements of the standard.

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BUREAU OF INDIAN STANDARDS

Headquarters :

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75
Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices : Telephonc

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002 — 331 01 31, 331 13 75

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Maniktola
CALCUTTA 700054 — 37 86 62

Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036 — 53 38 43

Southern : C.I.T. Campus, IV Cross Road, MADRAS 600113 — 2350216

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
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